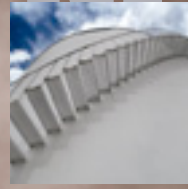


ROCKY MOUNTAIN OILFIELD TESTING CENTER 2006 SPRING NEWS



Office of Fossil Energy

RMOTC'S ROLE IN ACADEMIC RESEARCH AND EDUCATION

PROJECT LEADS: VICKI STAMP, MARK MILLIKEN, BRIAN BLACK

The Rocky Mountain Oilfield Testing Center's (RMOTC's) 10,000-acre oil field and geologic setting, along with the guidance of its professional staff, make it the ideal "classroom" for future geoscientists and engineers.

Academic visits by graduate students and their professors to RMOTC in 2005 included:

- In May, a student and professor from the University of Manchester in England came to Naval Petroleum Reserve No. 3 (NPR-3) to collect produced water and gas samples from selected wells. Sarah Mackintosh, a PhD. candidate in geochemistry, and her mentor Dr. Christopher Ballantine, are doing a study to determine baseline concentrations of noble gases in the producing formations at Teapot Dome. These baseline gas concentrations will be compared with gas samples collected during future carbon sequestration/CO₂ flood activities to detect changes in the chemistry of the formations due to CO₂ injection.
- In June, Laura Chiaramonte, a Stanford University student pursuing her PhD. in geophysics, visited NPR-3 to gather data on Tensleep fracturing for her dissertation project.
- In July, John South, a Brigham Young University graduate student, spent three days completing a High-Resolution Shallow 2D Seismic survey at Teapot Dome. This was BYU's second visit to RMOTC. RMOTC gave them access to the field to exercise their equipment and provide them with training.

- In August, Bryan Schwartz, a University of West Virginia student pursuing his MS in geology, came to RMOTC to collect data for a Tensleep Fracture Model for his upcoming thesis. His efforts were funded by the Department of Energy (DOE), by virtue of his participation on a National Energy Technology Laboratory (NETL) team to create reservoir modeling software. Schwartz was pleased with RMOTC's willingness to accommodate his research and said he looks forward to future collaborations.



RMOTC PARTNERS WITH WCA FOR TRAINING

PROJECT LEAD: RALPH SCHULTE

RMOTC has partnered with Wyoming Contractors Association (WCA) by providing its drilling rig one day a week for hands-on experience for WCA's students in the rig crew training class.

WCA uses RMOTC's rig and related equipment to train students in the proper way to install and remove the rig tongs and how to properly make the tongs bite on the drill pipe connection. Additionally, they learn how to set drill pipe slips and latch and unlatch drill pipe elevators.

WCA students come from all over the United States to attend rig training in Casper, WY.

After completing the one week training class, students receive job offers from various drilling contractors.

So far WCA has trained 85 students, of which 82 have completed the training. These students have been offered employment paying \$17.75 - \$22.50 per hour.

WCA and RMOTC are filling a need where there is shortage of personnel by providing individuals the skills it takes to work on a drilling rig. The reports from the employers have all been positive. They are pleased to be hiring personnel that have had some professional training and know the different equipment and parts.

When students come to the lower office for lunch, the enthusiasm can be seen in their eyes. Having the opportunity to put to use what they have learned in the classroom is very exciting for them. The students have also had to work in some adverse weather conditions which gives them a taste of what it is really going to be like on a drilling rig.

- In September, Scott Salamoff, a Colorado State University graduate student pursuing his MS, came to RMOTC to perform fracture collection and analysis of the Tensleep. He visited Teapot Dome analog outcrops at RMOTC with a goal to collect fracture orientations on several locations and work on the 3D volume of Teapot Dome for his thesis. RMOTC found that his detailed approach to studying fracture characterization could be beneficial to potential Enhanced Oil Recovery (EOR) projects.
- What students gain through their field work and research at RMOTC is reciprocated in turn. Academic visitors to the facility provide a direct value-added service to RMOTC through their efforts and an important contribution by sharing data and interpretations that can be used for future projects.



EPS TECHNOLOGY EXTENDS OIL WELL PRODUCTION

PETROLEUM RESERVE TESTING REAFFIRMS RESULTS

PROJECT LEAD: MARK MILLIKEN

Energy Production Systems (EPS) of Gillette, Wyoming, completed a year of round-the-clock technology testing at RMOTC in the fall of 2005 that resulted in increased productivity and lengthened the life of the tubing in a problem well by 400 percent. The testing was conducted to revalidate the ability of the EPS Tubing Rotator System

to extend the life and raise the production of stripper wells.

Fifteen percent of America's domestic oil production comes from over 650,000 stripper oil wells. A stripper oil well is a well with

a production rate that has declined to less than 10 barrels of oil per day (BOPD).

The goal for EPS was to delay the premature loss of stripper wells by reestablishing a market for the Tubing Rotator System, an existing,



Sandy Land, president of Energy Production Systems (right), prepares the rotating tubing anchor for installation on RMOTC well 24-AX-10.

one-of-a-kind technology. This patented, two-component system consisting of a rotating tubing hanger that attaches at the wellhead, and a rotating tubing anchor installed downhole, is intended to slow down the failure rate of wells by reducing the wear on the tubing and rods.

To reaffirm its value to the oil industry, this unique technology needed to be tested in a field environment. EPS found its requirements matched less than 200 miles away at NPR-3, a testing facility set in the realistic environment of a 10,000-acre oil field in the Teapot Dome area.

In 2004, EPS installed its Tubing Rotator System in an NPR-3 well the DOE had previously considered for abandonment. The well had a long history of rod and tubing failures, and had been shut in for five years due to poor economics.

To accurately test this technology at NPR-3, a tubing string with 95 new joints of tubing was run in the well at the same time the system was installed. RMOTC staff ran the well

on a continuous pumping cycle for one year. The results successfully confirmed the validity of the system.

From the time of installation to when they pulled the well in September 2005, there were no failures and the well produced at an improved economic rate. Production levels had increased to the levels of three years prior to shut-in.

Additionally, when tubing wear was measured, it demonstrated improvement over pretest failure rates, extending the life of the tubing by 400 percent. This well typically would have failed in four months time based on its previous history, but the use of the EPS system extended its life by at least another year.

RMOTC believes that the EPS Tubing Rotator System technology could play a key role in extending the life of many stripper oil wells, which would increase the amount of oil produced in the U.S.



The EPS Rotating Tubing Hanger installed on a wellhead.



By decreasing maintenance costs and valuable time lost during production, the reintroduction of this technology has positive economic implications through extending the well run time.

EPS believes that some of the benefits of the system are easy installation, no required additional power source, reduced maintenance and pulling costs, and reduced paraffin buildup in the tubing.

RMOTC'S RIG #1 SPUDS FIRST WELL

PROJECT LEAD: RALPH SCHULTE

RMOTC's newest drilling rig, RMOTC Rig No.1, spudded its first well December 10, 2005.

The well, 48-1-X-28, was involved in an international drilling test with Smith Services out of Aberdeen, Scotland, using tools and casing shipped from overseas.

Rig No. 1 was also used before being moved off the close offset original well 48-X-28, to perform a partial completion. RMOTC Rig No. 1 ran 3-1/2" tubing in well 48-X-28 and cemented. This partial completion will allow for further production or injection testing in the Tensleep formation at 5,500 feet.

Epoch Well Service, Maurer Technologies and Petris Technologies have been selected to provide rig instrumentation and data testing services for DOE. The rig sensors, data acquisition hardware and software have been installed on RMOTC Rig No. 1. Transmission of rig data to the internet is now possible with live updates on drilling and testing operations.

The field crews have done an excellent job in integrating the older equipment such as mud pumps, mud tanks, generators, etc, with the new rig.

The rig layout is cleaner and safer than ever before with the changes in the placement of the mud hopper and the mud tanks on level ground. New control panels for the older pumps have been built and are in use. New equipment such as pipe spinners and Kelly spinners eliminate the spinning chain and aid in the safety of the operation.



RMOTC HOSTS UNDERGRADUATE INTERNS

PROJECT LEADS: DAN SMALLWOOD, TOM ANDERSON

The Mickey Leland Energy Fellowship (MLEF), a summer internship program sponsored by the DOE's Office of Fossil Energy, supports minority students studying in academic disciplines related to the Fossil Energy mission.

For several years, RMOTC has sponsored and hosted one or two students each summer, in both geosciences and engineering disciplines.

Last summer, the program provided funds for two Hispanic students to intern at RMOTC: Andrew Klinker, a senior chemical engineering student at the University of Utah; and Guy Rubio, a senior geology student at the University of Texas at San Antonio. Klinker's work was

centered primarily with sampling gas concentrations in flow streams from selected wells throughout the field.

Guy Rubio's research at RMOTC was focused on the subsurface interpretation and mapping of an area in the northern part of NPR-3 where the Shannon reservoir is highly faulted. By interpreting numerous well logs and constructing cross sections and maps, he was able to help the RMOTC scientists better understand the nature of the faulting. His work will become an important part of an integrated subsurface model incorporating not only his analysis, but also shallow seismic data and surface expressions of the faults seen in rock outcrops and trenches.

NAVARRO TAKES OVER AS NEW CONTRACTOR

In June 2005, DOE's RMOTC support operations changed over to a new contractor, Navarro Research and Engineering, Inc., based in Oak Ridge, Tennessee. Navarro has predominately worked in environmental services and has several offices for DOE located at sites across the U.S.

There will be no change in personnel; the same technical staff remains with RMOTC led by Dr. Jim States

who has been chosen as the Program Manager for Navarro. Dr. States was born and raised in Wyoming and has more than 30 years of experience as an Environmental Scientist. Dr. States' current responsibilities at RMOTC entail dealing with the environmental aspects of oil and gas field testing and demonstrations.



Navarro office and project locations.



www.rmotc.com

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PROJECT BRIEFS

Fossil Lab

Bill Ochs, a Midwest School science teacher, worked hard to find funding for his students to participate in a fossil lab project at the Science Center at the NPR-3. The funding for the fossil lab participants came from the Casper Rotary Club and will allow students to participate in removing bones from rock using hand tools, air powered hand tools, sand blaster and glue to secure cracked bone that could become damaged during preparation. The instructor for this project is JP Cavigelli from the Tate Museum in Casper.

Data Sets Available at RMOTC

RMOTC is currently undertaking a large data management project. The goal of this project is to take the nearly 90 years of oilfield geologic, drilling, engineering and production data currently being stored in drawers, filing cabinets and various databases, and organize and amass all the data into one industry standard database. This database will allow RMOTC clients to have digital access to data needed for tests and projects. Preliminary results of the data management project have allowed RMOTC to put together four standard CD ROM data sets that are available for public use, covering the 3D seismic, core, and digital well logs. Over 100 CD ROMs have been placed with industry partners for research purposes thus far.

If you are interested in data sets on CD-ROM or pre-stack 3D seismic data, please contact RMOTC (www.RMOTC.com).

